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## **Bhutan-Swiss collaboration to institutionalize archaeology in Bhutan: Report on Activities in 2012**

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## **Bhutan-Swiss collaboration to institutionalise archaeology in Bhutan: Report on Activities in 2012**

Philippe Della Casa, Peter Fux, Hansruedi Diggelmann, Christoph Walser

### **1. Introduction**

In collaboration with Helvetas Bhutan and Share Foundation, the SLSA is conducting a research project programme for the institutionalization of archaeology in the eastern Himalayan kingdom of Bhutan.<sup>1</sup> Whilst the first three-year project phase was restricted to the excavation of the Drapham Dzong castle ruin dating to the 17<sup>th</sup> century,<sup>2</sup> the second phase (2011–2013) is focused on the establishment of a basis for the institutionalisation of archaeology with a first documentation of major archaeological sites and preservation and care of field monuments. At the same time, staff members of the Bhutanese Department of Culture are trained in field archaeology, and the first archaeological research reports are created for a first mapping of hitherto known archaeological sites in Bhutan. Therefore, not only teaching and training activities but also scientific data gained during the Swiss-Bhutanese engagement are most notable.

In spring 2012, a two-day workshop on legal aspects in archaeology was held at the National Library in Thimphu (see chapter 2). Under the conduct of Swiss lawyer and specialist in heritage conservation, Hansruedi Diggelmann, and supported by the archaeologist Christoph Walser from the Universities of Zurich and Bamberg (Germany), Prof. Philippe Della Casa (University of Zurich) introduced thirty employees from different public departments into the subject. The draft of the Heritage Sites Act of Bhutan was then discussed in groups.

In the following, the workshop group moved to Jakar in Bumthang, central Bhutan. Within one week, systematic field survey was taught by Prof. Philippe Della Casa, Christoph Walser and Peter Fux (Museum Rietberg Zurich; see chapter 3). Furthermore, the

<sup>1</sup> See Della Casa et al. 2012, pp. 173–175.

<sup>2</sup> See Meyer 2009, 2010, 2011.

**Fig. 1** Participants and teachers of the archaeological field survey in Bumthang.



participants were introduced into mapping and surveying (chapter 3.1) as well as data management using a geographical information system (GIS; chapter 3.2). Subsequently, the delegation visited several interesting sites, mainly for the purpose of planning further activities (chapter 4).

In autumn 2012, the archaeologist Christian Bader conducted a two-week teaching module in documentation and inventory of building structures (chapter 4). Twelve Bhutanese participants conducted a comprehensive documentation of the Obtsho-Dzong ruin in the Ghasa district, situated in the dense forest, 2,500 m.a.s.l. After the successful participation in all teaching modules held in 2011 to 2014, trainees will receive an official diploma in practical field archaeology (Certificate of Advanced Studies). As a main goal, five to ten diploma holders should be ready to take over archaeological tasks within the Ministry of Culture. It is hoped that in 2013, the first Bhutanese archaeological positions will be installed as a section within the Division for Conservation of Heritage Sites.

The project is generously supported by Elena Probst, President of the Share Foundation, and thanks to the successful collaboration with Helvetas, the project is running very successfully. A donation from Mrs. Verena Ris-Horstmann and Dr. Roland Ris allows the SLSA team to conduct archaeological fieldwork on a scientific basis.

## 2. Workshop on Legal Aspects in Archaeology (Thimphu, April 20 and 21)

The workshop was held in the conference hall of the National Library in Thimphu on April 20 and 21, 2012. The ceremonial inauguration was led by Lyonpo Minjur Dorji, Minister of Home and Cultural Affairs. The event was furthermore honoured by the participation of two national parliament members, the Dashos Rinchen Dorji (Chairman of Cultural Committee of National Assembly) and Tshewang Lhamo (Social and Cultural Affairs Committee), as well as Gembo Dorji, Secretary General of the central monk body (Zhung Dratshang).

The Swiss archaeologists team was accompanied by the lawyer lic. iur. Hansruedi Diggelmann, specialised in heritage conservation and building law. The Swiss team received in advance the draft of the Heritage Sites Act of Bhutan and studied it, in comparison with the actual Swiss legislation as well as with the Valetta Convention (European convention on the protection of archaeological heritage). On this basis, Diggelmann structured the two-day workshop. Thirty participants from administration and political departments conducted teamwork sessions and discussed the current legal situation, its socio-political context, actual and upcoming dangers and problems as well as potential differences to the Swiss and European situation. Subsequently, Diggelmann compiled a report which was sent to the Division for Conservation of Heritage Sites, Department of Culture. The Swiss delegation is happy to accompany the further development on the Heritage Site Act.



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Fig. 2 Lyonpo Minjur Dorji, Minister of Home and Cultural Affairs, during the opening ceremony at the National Library in Thimphu.

Figs. 3, 4 Teamwork during the classroom module on legal aspects in archaeology.



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Figs. 5, 6 During the module on legal aspects in archaeology, the cultural heritage act as well as many other issues were intensively discussed.

During the workshop the following points became obvious and are worth pointing out. First of all, archaeology would probably best be centrally organised in Bhutan due to the lack of a fair amount of archaeologically skilled personnel. Vice versa, regional staff reporting to the central administration is also crucial – a task which can be fulfilled by the cultural officers of the districts. Secondly, the state should evaluate the possibility to pay for rescue excavations, since most private builders would not be able to bear the costs. If this would not be the case, archaeological finds would hardly be reported. Furthermore, one has to keep in mind that archaeological finds are state property anyway. At this point however, it becomes clear that incentives to report finds must be offered to the people – a task which obviously goes hand in hand with the active support of public awareness and education, and which has to be coordinated. Thirdly, an archaeological zoning plan has to be developed and integrated within available zoning plans (e.g. urban zoning and development plans (master plans), nature and forest reserve areas) both on national and district levels, but centrally controlled. And last but not least, not only the reporting of finds has to be regulated, but also storage and publication of archaeological goods.

The Swiss team would be happy to cross-read and comment further revisions of the Heritage Sites Act. In summary, the outcomes of the workshop seem to confirm the organisation and agenda of the Bhutan-Swiss Archaeology Project. Besides the ongoing training of practical archaeology personnel in several districts, the set-up of a central archaeology department is necessary. Ongoing archaeological excavations and field-works as well as research projects enhance national public awareness and survey activities – linked with data mapping and the set-up of a geographical information system which can be integrated or linked to existing plans – are essential components of institutionalised archaeology in Bhutan. In doing so, practical experience as well as concrete upcoming questions can directly be integrated into the legal draft.

### 3. Choekhor Valley Survey, Bumthang

Following the workshop on Legal Aspects in Archaeology, a survey field school was undertaken in the district of Bumthang between April 23 and 28, followed by a two-day training on geographical information systems (GIS) and archaeological data mapping on April 30 and May 1, 2012, at RNRC. The field school and workshop were organised by Aum Nagtsho Dorji, head of the Division for Conservation of Heritage Sites in the Dept. of Culture, MoHCA, Karma Tenzin (Architect DCHS), Sangay Kinga (Senior Draftsman DCHS) and Namgyel Tshering from Helvetas Bhutan. The training was conducted by a Swiss expert team consisting of Prof. Dr. Philippe Della Casa (University of Zurich), Peter Fux M.A. (Museum Rietberg Zurich) and Christoph Walser M.A. (Universities of Bamberg and Zurich). The modules were attended by 16 cultural officers and culture management professionals from various Dzongkhags.





Fig. 7 Survey area and potential archaeological sites on the choekhor river's left side in the Bumthang Valley, central Bhutan, detected and mapped during the teaching modules held in spring 2012.

Fig. 8 Participants during the determination of their correct position in absolute coordinates using a compass and a topographical map.

Fig. 9 Completion of a standardised data sheet on a detected potential archaeological site.

### 3.1 Field school

The field school was conducted in the Jakar/Choekhor valley in the Bumthang district on the orographical left-hand side of the valley between Pangrithang and Jakar river bridge, and in particular the region between Tamshing and the Renewable Natural Resources Center (RNRC). The focus of the survey was on river terraces and cultivated areas, such as the cropland between and around the villages. In addition, further investigations were carried out in the forest hills northeast of Tamshing Lhakhang.

#### Approach and Methods

An archaeological survey aims at collecting and mapping information related to archaeological sites. As such, it is exploratory, empirical scientific work and has its own theoretical and methodical background. We distinguish three levels of survey:

- Archive survey: reaches from literature research to interviewing a contemporary witness (this type of survey is normally done in advance of a field survey).
- Field survey: covers all methods of physical research aimed at discovering sites.
- Remote sensing survey: is a non-invasive technique and includes terrestrial as well as air- or satellite-borne techniques to detect sites of historical relevance in the ground (like the archive survey, it is normally carried out in advance of a field survey).

The teaching module in spring 2012 focused on *field survey* techniques. The main goals were to show and teach the participants methods and techniques required to carry out an archaeological survey. This included minimal-invasive probing by using different types of augers or soil drills, or by digging test trenches. Other important learning matters were instrumental measuring survey techniques. Along with new methods such as the Global Positioning System (GPS), classic approaches to the subject were also part of the training. The trainees learned how to determine their correct position in absolute coordinates or, respectively, the position of a (new) site by conducting a resection using compass and topographical maps. Another major topic was taking measurements and creating drawings on an intra-site level, with the help of compasses, measuring tapes and/or survey levels (Fig. 8).

Besides teaching how to detect new sites, emphasis was also put on how to manage and analyse the data obtained. Information gathered during a field survey is the base for further heritage management like for example scientific or rescue excavations. With an outlook into the nearer future, structured field surveys will also deliver basic information for *archaeological zone planning* in Bhutan.<sup>3</sup>



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<sup>3</sup> Della Casa et al. 2012, p. 180.



Fig. 10 Interviews with a local informant.

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Standardised recording sheets were used for the field survey (Fig. 9). These data sheets include both archaeological and environmental information for a site and guarantee equivalent and comparable data. While collecting data in the field, and in particular during the subsequent GIS and data mapping training, the participants learned how important it is to use a standardised vocabulary or *thesaurus* in order to perform (spatial) queries.

Last but not least, the importance of interviews with local informants or contemporary witnesses was highlighted as probably the most important source of information about potential (pre)historical sites (Fig. 10).

#### *Fieldwork and outcomes*

After a theoretical introduction to the matter by Philippe Della Casa, a presentation of the history of the Jakar valley and its historical sites was given by Jigme Choden (Researcher at the National Library), including a visit to known historical sites in the surroundings of the research area. The apprentices were then divided into the three working groups according to the subdivision of the research area into three different areas. Each group (A–C) was led by a Swiss expert and a Bhutanese peer.

During the field survey, the three groups succeeded in discovering and recording 18 new or only partly known sites in the research area, reaching from simple wall structures to burial mounds and one large ruin (Yushingte Dzong, cf. below). This short field campaign, focusing more on teaching issues than on data collection, has already revealed a high archaeological potential of the study area. Attached is a shortened list of all discovered sites (cf. Fig. 7) – the descriptions correspond to the database entries done by the participants during the field school.



Nr:	1
Site:	JAK-12-A1
Locality:	Kenchosum
Coordinates:	Lat: 27,58466° Long: 90,73922° Height: 2,650 m.a.s.l.
Owner:	Sangay Rinchen
Site type:	Burial mound
Description:	Burial mound made of earth and stones; inside a stone floor and a stone slab structure with human bones and metal finds; modern trench on top of the burial mound
Nr:	2
Site:	JAK-12-A2
Locality:	Yushingti Dzong/Yushingte Dzong
Coordinates:	Lat: 27,588° Long: 90,742° Height: 2,850 m.a.s.l.
Owner:	Govt. & community forest
Site type:	Ruined dzong
Description:	Stone walls in dense forest
Nr:	3
Site:	JAK-12-A3
Locality:	Gartsang Ngalhakhang
Coordinates:	Lat: 27,66157° Long: 90,76037° Height: 2,922 m.a.s.l.
Owner:	Sonam Yangzom
Site type:	«Pema Lingpa's black smithing site»
Description:	Circular stone structure; iron slags; burned clay
Nr:	4
Site:	JAK-12-A4
Locality:	Kenchosum
Coordinates:	Lat: 27,58444° Long: 90,73905° Height: 2,638 m.a.s.l.
Owner:	Probably public
Site type:	Mound
Description:	Possibly a burial mound; two chortens on top
Nr:	5
Site:	JAK-12-A5
Locality:	Pholapong
Coordinates:	Lat: 27,58786° Long: 90,74683° Height: 2,774 m.a.s.l.
Owner:	Govt.
Site type:	Stone structure
Description:	Stones of a former ceremonial structure
Nr:	6
Site:	JAK-12-A6
Locality:	Pholapong
Coordinates:	Lat: 27,5877° Long: 90,74693° Height: 2,749 m.a.s.l.
Owner:	Govt.
Site type:	Stone wall
Description:	Stone masonry wall, 13 m×7 m

Nr:	7
Site:	JAK-12-A7
Locality:	Brogpoling
Coordinates:	Lat: 27,58489° Long: 90,74482° Height: 2,716 m.a.s.l.
Owner:	Govt.
Site type:	Large area covered with thick vegetation
Description:	Piles of stones; ruins of ancient village
Nr:	8
Site:	JAK-12-A8
Locality:	Kalpang (above Kenchosum Lhakhang)
Coordinates:	Lat: 27,58617° Long: 90,74007° Height: 2,651 m.a.s.l.
Owner:	Govt.
Site type:	Rock with cup marks
Description:	Stones; nearby abandoned water mill
Nr:	9
Site:	JAK-12-A9
Locality:	Behind Kenchosum Lhakhang
Coordinates:	Lat: 27,585° Long: 90,73965° Height: 2,642 m.a.s.l.
Owner:	Rinchen Phurba
Site type:	Mound
Description:	Possible burial mound of earth & stones
Nr:	10
Site:	JAK-12-B01
Locality:	Jachungthang
Coordinates:	Lat: 27,56735° Long: 90,74455° Height: 2,597 m.a.s.l.
Owner:	Govt.
Site type:	Rock, sacred place
Description:	Print of snake; small holes and cupmarks
Nr:	11
Site:	JAK-12-B02
Locality:	Jachungthang
Coordinates:	Lat: 27,56747° Long: 90,74433° Height: 2,594 m.a.s.l.
Owner:	Govt.
Site type:	Rock, sacred place
Description:	3 nos. of cuts on the rock; 18 cm human-made hole on the top of the rock
Nr:	12
Site:	JAK-12-B03
Locality:	Duen Phog
Coordinates:	Lat: 27,56787° Long: 90,74417° Height: 2,588 m.a.s.l.
Owner:	Sonam Tenzin
Site type:	Geomorphological window
Description:	Profile with several layers of charcoal, subdivided by sand layers



Nr:	13
Site:	JAK-12-B04
Locality:	Duen Phog
Coordinates:	Lat: 27,57059° Long: 90,74165° Height: 2,592 m.a.s.l.
Owner:	unknown
Site type:	Rock shelter
Description:	Charcoal; traces of smoke on the rock; fragments of pottery

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Nr:	14
Site:	JAK-12-B05
Locality:	Jachungthang
Coordinates:	Lat: 27,56796° Long: 90,74467° Height: 2,607 m.a.s.l.
Owner:	Tshultrim Dorji
Site type:	Sacred place
Description:	Foot imprint of Guru Rinpoche in the shape of Jachung

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Nr:	15
Site:	JAK-12-001C
Locality:	RNR centre
Coordinates:	Lat: 27,56441° Long: 90,75012° Height: 2,627 m.a.s.l.
Owner:	RGoB
Site type:	Architectural remains
Description:	Excavation trench conducted in 1998; circular stone masonry wall (2.3 m diameter × 1.2 m height); channel structure in stone masonry starting from circular structure (A) towards SW (0.74 m height × 0.57 m width; SLISA annual report 1998, 2000 and 2001)

Nr:	16
Site:	JAK-12-002C
Locality:	RNR centre
Coordinates:	Lat: 27,56423° Long: 90,75073° Height: 2,636 m.a.s.l.
Owner:	RGoB
Site type:	Architectural remains
Description:	Stone-built platform/substructure (SLISA annual report 1998, 2000 and 2001)

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Nr:	17
Site:	JAK-12-003C
Locality:	Between RNRC and Airport
Coordinates:	Lat: 27,56173° Long: 90,75025° Height: 2,570 m.a.s.l.
Owner:	RGoB
Site type:	Sacred place
Description:	Terrace structure, probably artificial (NW-SE approximately 50 metres, SW-SE approximately 12 metres); there are several rocks on the terrace covered by vegetation; the terrace is situated just above the river plain of the airport towards NE direction

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Nr:	18
Site:	JAK-12-004C
Locality:	South of RNRC
Coordinates:	Lat: 27,56387° Long: 90,75043° Height: 2,634 m.a.s.l.
Owner:	RGoB
Site type:	Samples
Description:	As per SLISA annual report 2000 and 2001 from site JAK-12-001C, there is a mound of stones & earth approximately 100 metres towards the south; the site has been affected during the construction of RNRC buildings

### 3.2 GIS and Data Mapping Workshop

The main goal of this course was to illustrate and teach the participants one possible way of handling and managing archaeological field data. In this case archaeological survey data by means of «classical» methods, such as field walking (cf. above).

Particular emphasis was put on a structured and proper data recording. Besides a detailed description of a site, another very important working step is capturing geographical information in order to place the feature in its spatial context. For the field training, each survey group was equipped with a handheld GPS. The basic principles of GPS measurements and the use of these devices were explained. An important objective was to point out the limitations of GPS, especially concerning its spatial accuracy.

Nowadays, a handheld GPS belongs to the standard equipment of an archaeological field survey. Considering the fact that a GPS receiver might not be available for every upcoming survey, the students learned how to do a resection using a compass and a topographic map or a georeferenced aerial or satellite imagery to determine their position, respectively the position of an archaeological site.

«... using GIS is more than simply pushing buttons»<sup>4</sup> (Field practice module: mapping and data modeling)

A geographic information system (GIS) is a tool to capture, visualise and manipulate all sorts of geographical data that are stored in a database.<sup>5</sup> Broken down into sim-

<sup>4</sup> <http://www.archaeolandscapes.eu/index.php/en/interpret/gis-integration/125.html> (23.03.2013).

<sup>5</sup> Definition: [http://en.wikipedia.org/wiki/Geographic\\_information\\_system](http://en.wikipedia.org/wiki/Geographic_information_system) (23.03.2013).

Fig. 11 Data mapping and documentation work on a newly detected potential archaeological site within a dense forest.

Fig. 12a, b Set-up work for the first Geographic Information System (GIS) for archaeology in Bhutan.



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plest terms, GIS is the merging of cartography, statistical analysis and database technology. In archaeology, a GIS is most commonly used for creating printable map layouts, archaeological zone planning and spatial analyses in scientific projects.

Since there is a wide variety of suitable tools for such a purpose on the market, different software packages were evaluated in advance. The software that should be used during the mapping and data modeling training module had to be user-friendly, affordable and robust, and it had to be able to fulfill all the standard tasks that may arise during the daily routine of archaeological and cultural heritage management.

After comparing different software, Quantum GIS (QGIS)<sup>6</sup> was selected for the training course. QGIS is a modularly open source software with a huge community in the background for support and development of different plugins for any kind of purpose. Moreover, it fulfills all industry standards and is therefore highly compatible with other GIS tools, and last but not least it is free of costs. As a database background, Microsoft® Excel was chosen due to the fact that most of the participants were familiar with Microsoft's office package. Alternatively, more sophisticated programs like Microsoft® Access or PostgreSQL/PostGIS could be used as well.

The training was applied in a very practical manner. It was intended that the COs should work and learn with actual data. Hence, the information gathered during the field-survey was used as exercise material. Subsequent to the data preparation and revision, initial analyses were undertaken using GIS software. None of the students had

<sup>6</sup> <http://qgis.org/> (23.03.2013).



12 a



12 b



13



14

Fig. 13 Photographic documentation of finds on site, using standardised information sheets.

Fig. 14 Completion of the documentation sheets after a long workday in the field.

any experience with GIS beforehand, so a general introduction to its functionality and the different kinds of data (geo-data) that can be processed was given. Unfortunately, only a limited number of computers was available, so the participants had to split up in groups. Giving a practical introduction into a rather complex subject like this can be very time-consuming. Since a huge amount of tasks had to be explained, the course teachers decided to give a step-by-step tutorial, so that each student had the chance to take notes and ask questions before moving on to the practical implementation.

First of all, after a short overview of the program QGIS and its menus, it was explained how to establish different kinds of background maps for visualising the collected field data and for further spatial analyses. The participants were then shown how to generate a digital elevation model (DEM) of Bhutan using freely available satellite data (SRTM 90 Digital Elevation Data)<sup>7</sup> and how to process georeferenced aerial imagery. For this training module, Google Earth™ imagery has been used since it offers high resolution images of our key research area around Jakar town. For later office work, it is advisable to use aerial imagery provided by the local land survey authority since users may come across license issues using Google data. Afterwards, the students learned how to visualise the archaeological field data, how to generate (spatial) queries and how to create printable map layouts (Fig. 7).

As a complementation of the data mapping module, the potential of GIS applications for complex analyses in archaeological research were outlined and presented by means of several examples of different research projects conducted by the Swiss expert team.

#### 4. Site Inventory and Documentation at Obtsho Dzong, Gasa

The Obtsho Dzong ruins in the Gasa district was visited by Dr. Eberhard Fischer and Namgyel Tshering in 2010 and by Prof. Philippe Della Casa, together with Peter Fux, in autumn 2011. They all came to the decision that the site, located in a dense forest at an altitude of approx. 2500 m.a.s.l., would be appropriate for conducting a teaching module on building documentation. Furthermore, the monk body's aim to construct a meditation center on site makes a documentation and inventory of the site necessary. Therefore, the project members decided to organise a field school in autumn 2012. Christian Bader, specialised in building documentation, was recruited to lead this module. The extensive report is included in this publication as a separate contribution (see below).

#### 5. Site visits

Several sites and situations were visited on various occasions during the Swiss team's stays in Bhutan in 2012, either because they appeared to be of particular interest, or because the Bhutanese project partners requested some expert opinion on their importance and/or future heritage management issues.

<sup>7</sup> [http://srtm.csi.cgiar.org/\(23.03.2013\)](http://srtm.csi.cgiar.org/(23.03.2013)).

Fig. 15 Chubjakha Dzong in the Paro district.

### 5.1 Chubjakha Dzong

Following the invitation of Aum Nagtsho Dorji, head of the Division for Conservation of Heritage Sites, to investigate and identify potential archaeological sites in Paro valley, a Swiss expert team consisting of Christoph Walser M.A. and Prof. Dr. Philippe Della Casa visited Chubjakha Dzong during a recognition journey in 2012. The site visit was initiated and organised by Paro dzongkhag officials and Mr. Namgyel Tshering from Helvetas Bhutan. It took place on April 19, 2012, with participation of Paro cultural officer Mr. Karma Dorji, Paro engineer Mr. Sangay Phuentso, Mr. Karma Tenzin from DCHS, and a local guide. Purpose of the visit was to assess the overall archaeological situation of the site, the architectural state of the Dzong ruin, and the possibilities of future engagements by the Bhutan-Swiss Archaeology Project.

The Chubjakha Dzong ruin (Fig. 15) is situated some 500 metres above Paro Rinphung Dzong at an altitude of 2,872 m (coordinates: 27,42480 N/89,43935 E). It is said to be the fourth, and possibly uppermost dzong in a series of fortifications built on the eastern slope of the valley in defensive positions. The ruin forms a vast site of several hectares, and lies within an extended cultural landscape covering terraces of agricultural terrain and woodland (Chubjakha community forest project by Helvetas). The area comprises hamlets, houses and farmhouse ruins, as well as managed woodlands, orchards and agricultural fields. As such, it appears as an open landscape with great historical potential.

The archaeological site properly encompasses a vast terrace in agricultural use, delimited by an outer ditch, and the actual Dzong ruin, again separated from the terrace by a steep ditch that runs all around the constructed area and remains visible even on the lower terraces. The Dzong ruin is extremely well preserved, probably due to a powerful Nye belief that prevented the looting of construction stones, and has many walls still standing at a height of up to 12 m and more. The quality of the masonry is exceptional; it consists mostly of dry-stone walls with some inner parts built of rammed earth. Many large wooden lintels of windows and doors are preserved in situ and appear perfectly suitable for dendro-chronological investigations.

In the valley slope in a westerly direction there is a sequence of four towers (so called «watchtowers») connected by steep stairways in double wall constructions, the lowest tower obviously being a water well/cistern, which probably led to the name of the fortress («Chu-jakha»). This entire area of several hundred metres lies within the inner ditch which is perfectly visible in the forest, partly as a fortified trench with supporting stone walls of astonishing preservation.





The overall state of the ruin is excellent, only smaller parts of the outer walls are collapsed, while more destructions are visible on the inner parts, some possibly due to the 2011 earthquake in nearby Haa valley. The vegetation cover is dense and sometimes affects the masonry, but accessibility is granted to any part of the Dzong ruin. While the area is in agricultural use to the present day, it shows many traces of former land use, cultivation and human impact of unknown age. Actually, major threats to the site and ruin come from agricultural activities carried out all around the fortress – in particular on the main terrace facing the ruin to the East – and the uncontrolled development of buildings and structures in the immediate surroundings.

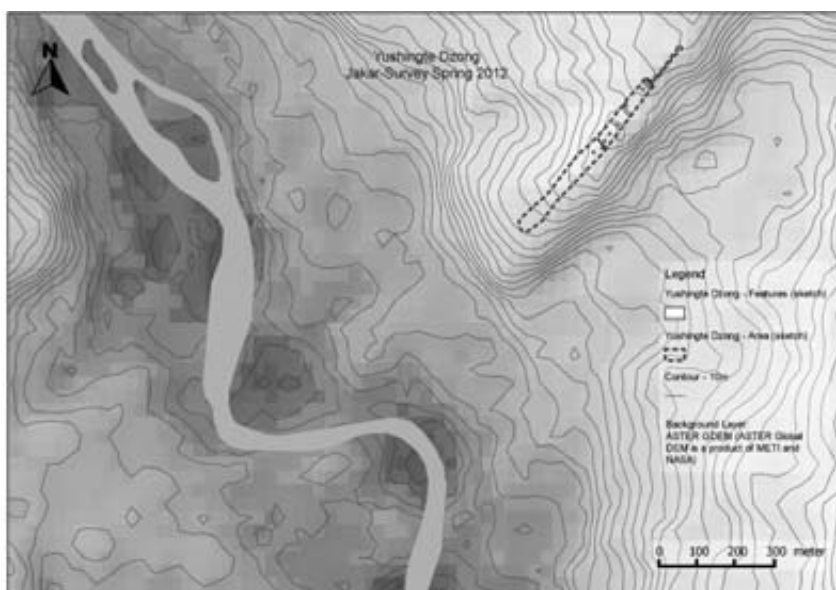
Given the excellent state of preservation of not only the Chubjakha Dzong ruin itself, but also the entire archaeological landscape around the site, and given the historical importance of the site in the country's history (cf. text by F. Pommaret below), an extensive protection and conservation of both the ruin and the surrounding cultural landscape should be carried out. There are probably not many medieval dzongs in Bhutan as well-preserved within their original landscape as this one, and at the same time so accessible – both for management and research, but also for looting. The archaeological potential of the entire Chubjakha site in terms of historicity and heritage management, including touristic valorisation, can be considered as exceptional. In the outstanding case of Chubjakha Dzong, an integral preservation and careful management of the site would not only assure long-lasting conservation of an archaeological ruin and historical landscape of utmost importance, but also serve as an exemplary case study for the development of sustainable archaeological heritage management.

*Notes on Chubjakha Dzong, by Françoise Pommaret (personal communication)*

First construction attributed to Drung Drung (14<sup>th</sup> cent. AD), a religious master of the Hungrel nobility of Paro and descendent of Phajo Drugom Shigpo, founder of the Drukpa Kagyupa school in Bhutan, who had established a small monastic community at a place called Zimkhang Wogma, later destroyed and rebuilt by his successors. The water tower is supposed to be connected to Paro Dzong which before the Zhabdrung (17<sup>th</sup> cent. AD) belonged to the Hungrel family.

## 5.2. Yushingte Dzong (site JAK-12-A2)

This site had been previously visited during RNRC excavation activities.<sup>8</sup> According to sources related by Michael Aris,<sup>9</sup> the site could be the Choekhor Dep's residence called «Yuwashing Dzong» – further historical investigations are however needed to ascertain this information.



**Fig. 16** Plan of the Yushingte Dzong ruins, acquired during the field survey, and later integrated in a map based on a digital surface elevation model.

<sup>8</sup> See Blumer 2002, p. 120–122.

<sup>9</sup> Aris 1989, p. 69/70.

Fig. 17 Map of the Yushingte Dzong ruins, based on GPS and level measurements.

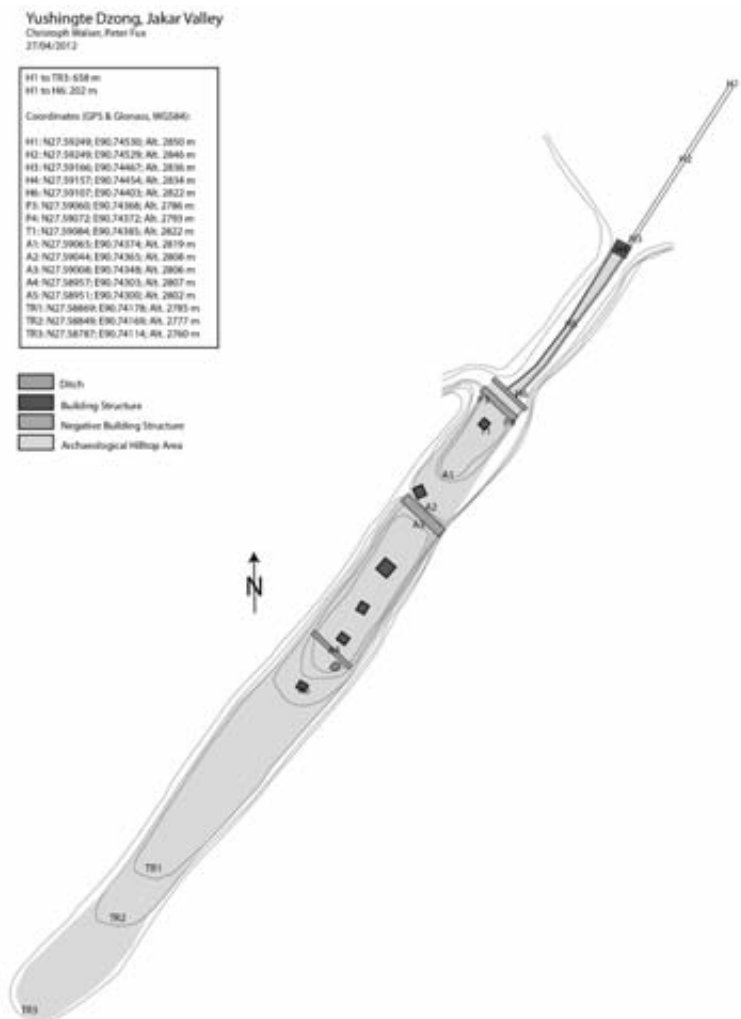


Fig. 17

The ruins of Yushingte Dzong were documented during the Jakar valley field school (see Fig. 7). They lie on a mountain ridge northeast of Tamshing Lhakhang. The hill is oriented NE-SW and is characterised by steep flanks. The architectural complex encompasses more or less the whole hilltop, and spreads over six terraces ascending from 2,760 up to 2,822 m.a.s.l. (Figs. 16, 17). The Dzong ruin is protected by two parallel ditches against the mountain. From the last ditch, a corridor heads towards NE, leading to the fundaments of a tower. Including this pathway, the ruin spans over more than 600 m.

The two uppermost terraces of the hilltop form the central area of the architectural system. They are subdivided by a massive ditch. Each terrace is protected both towards south and north through further ditches. Including the tower at the end of the complex, eight building structures have been recorded so far. The walls of the buildings are only preserved at low heights, with just a few layers of stones above the surface. In one of the buildings, only a foundation pit is preserved.

Today, the whole ruin complex is overgrown with bushes and trees, and it is in a rather poor conservation status, though somehow protected by dense forest vegetation. The historical background, exact age and ownership relationships cannot be determined at the current state of research. Nevertheless, merely by virtue of its enormous size and the massive defence infrastructure, the ruin testifies of its great historical importance for the whole of the Jakar valley as well as for the surrounding areas.

### 5.3. Gartsang Ngalhakhang (site JAK-12-A3)

The Swiss expert team visited the Gartsang Ngalhakhang site («Pema Lingpa's black smithing site») together with Mr Tenzin Wangchuck DCHS and several cultural officers during the Bumthang/Jakar valley survey. The site had previously been reported to DCHS officials and briefly visited by members of the Drapham Dzong excavation team in 2008/10. Purpose of the visit was to assess the archaeological situation of the site (Fig. 7).

The site is in sight connection with the Drapham Dzong hilltop and is located at around 15 min. walking distance from the ruin, above the village of Ngalhakhang on a gentle slope and in a small river channel below the wood-covered slopes to the north of the village. Characteristic elements in the surface scatter (roughly estimated at 0.5–1.0 ha), in particular the different types of slag and collapsed stone structures with traces of heating (Fig. 18), indicate that we are dealing with a metal smelting site – hence a site where ore was processed into raw metal, in this case most probably iron.

There is a high probability that the primary ore was mined close to the site, on the hill slopes and in the narrow valleys. This could not be ascertained during the survey, but small fragments of metal ore in the riverbed which has to be crossed on the way to the site seem to point in that direction. Even though nothing secure can be said about the age of the site, charcoal inclusions in the slags would easily allow for radio-carbon dating. Whether the vicinity to Drapham Dzong indicates some structural and/or chronological relationship would need to be further investigated.

Photographs of the slag samples collected during the survey (Fig. 19) were submitted to Dr. Marianne Senn, specialist in iron archaeometallurgy at the EMPA (Federal

Fig. 18 Gartsang Ngalhakhang. Collapsed stone structures with traces of heating and slag indicate a metal smelting site.

Fig. 19 Pieces of slag found at Gartsang Ngalhakhang.



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Institute for Material Testing) in Dübendorf, Switzerland, and partner of the Dept. of Prehistory at the University of Zurich. According to Dr. Senn, the slags from Gartsang Ngalhakhang show certain flow features typical of the «direct smelting process» as well as impressions of constructive elements; moreover, they lack the vitreous structure typical of blast furnace slags. Therefore, it can be presumed that we are facing a bloomery furnace smelting site.

In its actual state, the site seems not to be under any particular threats – at least not as long as the area is only used for extensive grazing, as is the case today. However, we assume that not many early metal or specifically iron processing sites are known in Bhutan; Gartsang Ngalhakhang can thus be considered an outstanding place for the history of metal technology and deserves proper attention for the future.

## **6. Outcomes and Perspectives**

The 2012 activities within the Bhutan-Swiss Archaeology Project, namely the workshops on Legal Aspects in Archaeology and the field schools in Bumthang and Gasa, addressed a series of aspects and questions most pertinent to the future development of archaeology in Bhutan, and in particular the institutionalisation of an archaeological heritage management service. The project partners are confident that the goals set for phase II, 2011/13 (cf. SLSA report 2011) will be met, as a full cohort of young professionals – mostly cultural officers, but some also practitioners – have consistently attended the modules of the educational programme, and should therefore be able to take over responsibilities in the future archaeological service.



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